

CLAIMS

1. A semiconductor wafer cleaning formulation for use in post plasma ashing semiconductor fabrication comprising the following components in the percentage by weight ranges shown:

At least one organic amine	15-60%
5 Water	20-60%
An ammonium borate compound	9-20%

2. A cleaning formulation as described in claim 1 wherein said ammonium borate compound is selected from the group consisting of ammonium tetraborate and ammonium pentaborate.

3. A cleaning formulation as described in claim 1 further including a polar organic solvent having a percentage by weight range of 0-15%.

4. A cleaning formulation as described in claim 2 further including a polar organic solvent having a percentage by weight range of 0-15%.

5. A cleaning formulation as described in claim 1 wherein said organic amine is selected from the group consisting of:

Monoethanolamine (MEA)  
Pentamethyldiethylenetriamine (PMDETA)  
5 Triethanolamine (TEA)

6. A cleaning formulation as described in claim 2 wherein said organic amine is selected from the group consisting of:

Monoethanolamine (MEA)  
Pentamethyldiethylenetriamine (PMDETA)  
Triethanolamine (TEA)

7. A cleaning formulation as described in claim 3 wherein said organic amine is selected from the group consisting of:

Monoethanolamine (MEA)

Pentamethyldiethylenetriamine (PMDETA)

Triethanolamine (TEA)

8. A cleaning formulation as described in claim 2 wherein said organic amine is selected from the group consisting of:

N-Methyldiethanolamine

Diglycolamine

5 Diethylethanolamine

Hydroxyethylmorpholine

9. A cleaning formulation as described in claim 1 further including one or more of the compounds selected from the group consisting of surfactants, stabilizers, corrosion inhibitors, buffering agents, and cosolvents.

10. A semiconductor wafer cleaning formulation for use in post plasma ashing semiconductor fabrication comprising the following components in the percentage by weight ranges shown:

	TEA	35.2%
5	Ammonium tetraborate	11.4%
	Water	39%
	N-Methylpyrrolidone	14.3%

11. A cleaning formulation as described in claim 10 further including one or more components selected from the group consisting of surfactants, stabilizers, corrosion inhibitors, buffering agents, and cosolvents.

12. A semiconductor wafer cleaning formulation for use in post plasma ashing semiconductor fabrication comprising the following components in the percentage by weight ranges shown:

	MEA	35%
5	Ammonium tetraborate	20%
	Water	45%

13. A cleaning formulation as described in claim 12 further including one or more components selected from the group consisting of surfactants, stabilizers, corrosion inhibitors, buffering agents, and cosolvents.

14. A method for fabricating a semiconductor wafer including the steps comprising:  
plasma etching a metalized layer from a surface of the wafer;  
plasma ashing a resist from the surface of the wafer following the metal etching step;  
cleaning the wafer in a following step using a chemical formulation including the

5 following components in the percentage by weight ranges shown:

At least one organic amine	15-60%
Water	20-60%
An ammonium borate compound	9-20%

15. A method described in claim 14 wherein said ammonium borate compound is selected from the group consisting of ammonium tetraborate and ammonium pentaborate.

16. A method as described in claim 14 further including a polar organic solvent having a percentage by weight range of 0-15%.

17. A method as described in claim 15 further including a polar organic solvent having a percentage by weight range of 0-15%.

18. A method as described in claim 14 wherein said organic amine is selected from the group  
5 consisting of:

Monoethanolamine (MEA)  
Pentamethyldiethylenetriamine (PMDETA)  
Triethanolamine (TEA)

19. A method as described in claim 15 wherein said organic amine is selected from the group consisting of:

Monoethanolamine (MEA)  
Pentamethyldiethylenetriamine (PMDETA)  
Triethanolamine (TEA)

20. A method as described in claim 16 wherein said organic amine is selected from the group consisting of:

Monoethanolamine (MEA)  
Pentamethyldiethylenetriamine (PMDETA)  
Triethanolamine (TEA)

21. A method as described in claim 15 wherein said organic amine is selected from the group consisting of:

N-Methyldiethanolamine  
Diglycolamine  
Diethylethanolamine  
Hydroxyethylmorpholine

22. A method as described in claim 14 further including one or more of the compounds selected from the group consisting of surfactants, stabilizers, corrosion inhibitors, buffering agents, and cosolvents.

23. A method for fabricating a semiconductor wafer including the steps comprising:  
plasma etching a metalized layer from a surface of the wafer;  
plasma ashing a resist from the surface of the wafer following the metal etching step;  
cleaning the wafer in a following step using a chemical formulation including the

following components in the percentage by weight ranges shown:

TEA	35.2%
Ammonium tetraborate	11.4%
Water	39%
N-Methylpyrrolidone	14.3%

24. A method as described in claim 23 wherein said formulation further includes one or more components selected from the group consisting of surfactants, stabilizers, corrosion inhibitors, buffering agents, and cosolvents.

25. A method for fabricating a semiconductor wafer including the steps comprising:  
plasma etching a metalized layer from a surface of the wafer;

plasma ashing a resist from the surface of the wafer following the metal etching step;  
cleaning the wafer in a following step using a chemical formulation including the  
following components in the percentage by weight ranges shown:

5	MEA	35%
	Ammonium tetraborate	20%
	Water	45%

26. A method as described in claim 25 wherein said formulation 19 further includes one or more components selected from the group consisting of surfactants, stabilizers, corrosion inhibitors, buffering agents, and cosolvents.